y2522li_a1q3

January 29, 2021

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```
# Standard imports
import numpy as np
np.seterr(all='ignore');  # allows floating-point exceptions
import matplotlib.pyplot as plt
```

1.1 Q3: FPNS $\mathcal{F}(6, 6, -6, 6)$

1.1.1 (a)

The largest value is $0.111111 * 6^6$.

1.1.2 (b)

$0.545335 * 6^{-2}$

1.1.3 (c)

First find the machine epsilon in decimal system. $E = \frac{1}{2}\beta^{1-t} = \frac{1}{2}6^{1-6} = 0.5 * 6^{-5}$.

Now convert the result into normalized base-6 format. $E = 0.3 * 6^{-5}$

1.1.4 (d)

Any number with $-6 \leq p \leq 0$ is smaller in magnitude than 1.

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